**HUMAN FREEDOM INDEX AND ITS EFFECT ON GDP GROWTH**

Jack Kister

Marquette University

john.kister@marquette.edu

May 6, 2024

**Abstract:** Using data from 2000 to 2021 from the Cato Institute’s Human Freedom Index as well as the World Bank’s World Development Indicators Databank, this paper looks to estimate the effect of the Human Freedom Index and its effect on a country’s level of production which is measured by GDP growth rate per capita. The fixed effects regression finds that there is a positive relationship between a country’s human freedom level and their GDP growth rate per capita.

**JEL Codes:** F10, O11, O43

**Keywords:** human freedom; growth rate; economic freedom

**I. INTRODUCTION**

Countries undeniably have differing levels of freedom, which can potentially have economic effects for their citizens. These freedoms can take the form of economic freedom, which is usually an indication of how open a country’s markets are for trade. However, the focus of this paper is human freedom, which is a combination of political, personal, and civil freedoms. As human freedom is a complex concept that involves many different areas of life in society, it is often represented by the Human Freedom Index. The Human Freedom Index is collected by the Cato Institute, and it is constructed from a combination of variables to represent freedom including rule of law, safety and security, freedom of moment, religion, association, assembly, civil society, expression and information, and relationships (Cato Institute, 2023). According to recent literature, this human freedom has decreased in recent years (Hu, 2020), especially in the time of the pandemic, where large decreases in freedom of movement and assembly as well as rule of law were present in many countries (Cato Institute, 2023).

There has also been existing literature to show that restricting freedoms can have an effect on economic indicators in different countries (Berggren and Jordahl, 2005; Gwartney, Lawson, and Holcombe, 1999; Hussain and Haque, 2016; Naanwaab and Diarrassouba, 2016; Naanwaab, 2018; Gezer, 2020), however, most existing literature does not look at human freedom specifically, meaning there is a hole in the literature regarding the economic effects of human freedom. However, it is possible that because of these differing levels of freedom, that it has possible effects on a country’s economic indicators. If there is indeed a relationship between levels of human freedom and economic indicators, it could be a valuable baseline for policy makers that attempting to implement policies to adjust the levels of human freedom could see a change in the level of the specified economic indicator. While this does not look at a specific policy change, it could be an important initial finding to demonstrate the possible relationship between human freedom and the economic state of a country. When looking at the economic state or indicator of a country, growth is considered for this project. The results of this paper do display a positive relationship between the human freedom index of a country and the growth rate per capita of a country, indicating that a baseline level of human freedom in a country can be important for improving a country’s economic output levels. Specifically, it is measuring the effect of human freedom on GDP growth rate per capita.

This paper will begin with a brief review of existing literature that demonstrates similar concepts of freedom affecting economic indicators, although human freedom is not often looked at in the literature. It will then review the datasets used from the Cato Institute and the World Bank and cover the fixed effects methodology that the study employs. It will next cover the results of the fixed effects analysis and then finish with conclusions on the research as well as future implications of this paper. The overarching research question for this project is: does human freedom have an effect on the level of growth in production for a country.

**II. LITERATURE REVIEW**

As mentioned, there is a rather large hole in the literature regarding the effect of human freedom on economic indicators, as well as anything somewhat relevant to economic concepts and human freedom whatsoever. The most common form of analysis was using panel data to analyze the effects of varying levels of economic freedom in different countries and its effect on GDP growth. (Berggren and Jordahl, 2005; Gwartney, Lawson, and Holcombe, 1999; Hussain and Haque, 2016; Naanwaab and Diarrassouba, 2016) All of these papers found statistically significant positive effects of economic freedom on GDP. All the papers also used some form of an economic freedom index in order to estimate the levels of economic freedom for their regression analysis. Common covariates included unemployment rates and foreign direct investment. Berggren and Jordahl (2005), Gwartney, et al. (1999); Hussain and Haque (2016) all used GDP growth rate per capita as their dependent variable of interest to measure the change in production stemming from varying levels of economic freedom, as it controls for both the population and relative wealth of a country effectively.

Similarly, the literature also looked at economic freedom and its effect on other economic indicators of a country including the Human Development Index as well as the OECD’s Better Life Index. Naanwaab (2018) and Gezer (2020) both looked at economic freedom and its effect on the Human Development Index, which is an index value that represents levels of education, life expectancy, levels of health, and levels of personal income. Both studies found a positive impact on the Human Development Index from higher levels of economic freedom. Similarly, Nikolaev (2014) looked at economic freedom’s effect on the OECD’s Better Life Index, which is a similar measurement of quality of life in a country. Nikolaev finds that there are strong positive relationships between economic freedom and various aspects of the Better Life Index, which is further indication that economic freedom has positive effects on economic indicators in a country. Indexes are seen to be the standard way of measuring abstract concepts like freedom and quality of life, as they are a good way to operationalize these multifaceted concepts. One could argue that the weighting in some of these index values is flawed, and that could be a valid motivation to look more specifically at categories of each index for future research.

Gezer (2020); Hussain and Haque (2016) both used fixed effects analysis with panel data for their regression analysis, and my regression was most similarly structured to theirs in comparison to the other models in the literature, so fixed effect analysis was used in this paper’s analysis. Of the little literature that does exist on the Human Freedom Index, it is seen to be trending downward. Hu (2020) displays that the Human Freedom Index has decreased 7.4 in 2008 to 6.98 in 2016, while the economic freedom index saw a slight increase during this time period.

It is unfortunate that the current state of human freedom and its effect on economic indicators has such little literature, and this paper attempts to help fill this large hole in the literature. It is important to display a baseline estimation for the human freedom index and its effects on economic indicators, as there are a lot of possible dependent variables in future research, as the human freedom index could have many more economic implications than just on GDP growth rate per capita. While it is valuable to see that economic freedom has a positive effect on these indicators as it is a form of freedom, it is still an entirely different concept than human freedom, so more research would be necessary to capture this effect.

**III. DATA**

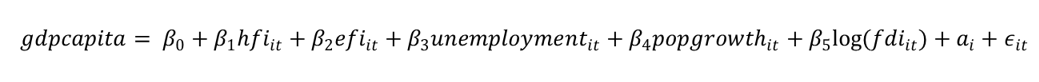
The data for this paper is from two different data sets that are merged to create the final panel data set for fixed effects analysis. The first data set is the 2023 Human Freedom Index Report from the Cato Institute. This report looks at the levels of human freedom in each included country and breaks down the human freedom index into different categories of freedom and breaks these categories down into subcategories in order to calculate the Human Freedom Index value. It also includes an Economic Freedom Index value for each country. The data set has data on 165 jurisdictions from the year 2000 to 2021 and is very thorough and does not contain much missing data. While only 165 countries are included in the report, it covers 98.8 percent of the world population, meaning that the overwhelming majority of individuals are covered by this data set.

The second data set is from The World Bank’s World Development Indicators Databank, which compiles high quality data on various measures of development indicators for different countries across the world. The data used from the World Development Indicators bank in this regression analysis goes from 2000 to 2021 and comes from 217 countries. For all non-freedom index-related values, the World Development Indicators bank was used and the data for these variables were then merged based off year and country for each observation. Because there are only 165 countries in the Freedom Index, the number of countries in the final data set is limited to the amount on the HFI report, so some of the countries in the WDI databank data set are lost when the two data sets are merged as freedom index values are required for the regression to run. There likely would not be a problem with sample selection bias, as covering almost 99% of the world's population for selection into the data set would mean that there would only be a small effect of selection bias affecting the estimators, so estimations would likely remain similar.

**IV. METHODOLOGY**

The methodology that is used for this analysis is fixed effects analysis. As mentioned in the literature, the preferred methodology for similar regression analysis is fixed effects analysis, and like all similar studies in the literature, this study uses panel data as well. To choose between random effects and fixed effects, a Hausman test was employed, where the results of the test indicated that fixed effects analysis was the preferred methodology for the data set. Also, a modified Wald test was used to test for possible heteroskedasticity in the regression, and the test indicated that there was a statistically significant presence of heteroskedasticity in the regression. Because of this, robust standard errors were used to account for this heteroskedasticity present in the regression.

The equation that is estimated to measure the effect of the Human Freedom Index on GDP growth rate per capita is:



The dependent variable is *gdpcapita* which is the GDP growth rate per capita represented as a percent. Per capita GDP is used so that countries of various sizes can be compared relatively, as their numerical changes would likely be very different as their populations would be different magnitudes. It is also used as a percent to allow for countries with drastically different levels of wealth to be compared, as countries that are much wealthier could have much higher numerical changes in GDP, but it may be relatively similar when represented as a percent, allowing for countries with differing levels of wealth to be relatively compared.

As mentioned, the variable of interest is *hfi*, or the Human Freedom Index value for each individual country at each year. This is an aggregation of the different kinds of freedoms mentioned in the introduction and is measured on a scale of 0 to 10, where 0 is the lowest level of human freedom a country can have according to the Human Freedom Index, and 10 is the highest level of human freedom a country can have. The hypothesis of the relationship between the variable of interest of the Human Freedom Index and the dependent variable of GDP growth rate per capita is a positive relationship. This is partially because all of the literature on freedom and its effect on economic indicators saw a positive relationship between the two, although none of these focused on human freedom specifically. However, it makes sense for the relationship between the two variables to be positive as well. Intuitively, one would expect that a greater ability to express oneself, assemble in public, vote, and partake in other freedoms would cause people to feel more enfranchised in a society. This feeling of enfranchisement likely would make them feel less discouraged in the labor market and could likely encourage entrepreneurial attitude that could help a country’s wealth grow. People also might be more interested in contributing to a society or a community where their self-expression and identity is more accepted. Also, if people feel discouraged from entering a specific sector of the labor market, this could cause economic inefficiency. If people are not able to sort into the labor market based off what they are best at due to outside factors, they would not be maximizing their skills in the labor market, making a country’s economy less efficient and therefore lowering production.

The economic freedom index value, or the variable *efi*, is also included which is an aggregation of various economic indicators of a country in each year which represents a country’s level of regulation, barriers to entry, open markets, sound money, and size of government. While the level of economic freedom is not the focus of this study, it is important to include it in the regression as it is an effect worth accounting for. Because I am trying to separate the effect of human freedom from the effect of economic freedom, it is included as a control variable in order to parse out the effect of economic freedom from the effect of human freedom, to only find the effect of human freedom. There was a concern about economic freedom and human freedom having possible collinearity as some countries may have similar levels of freedom between the two variables, however, this is dealt with in the results section.

The control variables include *unemployment*, which is unemployment rate measured as a percentage of the labor force for each country, and this is included as it has had a historically negative relationship with GDP growth, and it can control for macroeconomic trends within a country’s economy. Population growth measured as a percent is included in the regression in the term *popgrowth*, and this is used to control for any sudden changes in population that may largely affect the level of GDP per capita a country has, even though it may not actually be representative of the level of production that the country really has as it may not adjust instantly within the year to the influx or loss of population. Lastly, the logarithm of foreign direct investment is included as a control variable, which is represented by the *fdi* term, as foreign direct investment is something that could largely affect a country’s level of production, and it may not be represented by internal trends in the country’s economy as it can be an external factor.

**V. RESULTS**

The summary statistics paint a picture of the data to help give context to the meaning behind the human freedom index values, as they are not necessarily intuitive to understand as they are complex index values. Table 1 shows the summary statistics for all countries and time periods in the fixed effects analysis.

Table 1

A table with numbers and symbols

Description automatically generated

When looking at the human freedom index values, the minimum value of 2.08 is seen to be Syria in 2014, and countries who have similarly low values are seen to be countries including Myanmar, Yemen, Bahrain, and Saudi Arabia. All of these countries have governments that impose very strict religious laws, which is likely why their human freedom index values are calculated to be so low. The highest value is represented by Denmark in 2015, and countries with similarly high values include Nordic countries as well as other European democracies. For reference, the United States usually hovers around the 9 values, indicating that it is relatively a very free country.

It is also seen that the standard deviation for the human freedom index is larger than the standard deviation for the economic freedom index despite having a similar range, which could indicate that the range of human freedom across countries is wider than the range of economic freedom. However, this interpretation does come with a grain of salt as the normalization of complex index values like this does make numerical interpretation like this inconsistent. The mean of the human freedom index is also seen to be 7.32, which is higher than the central score of 5 which could indicate that countries lean more towards human freedom than not, although, once again, interpretation like this is not perfect as it is an index value that is not a true numerical value.

Table 2 includes the results from the fixed effects regression of the equation specified in the methodology section that displays the relationship between the human freedom index values and the GDP growth rate per capita.

Table 2

A screenshot of a computer

Description automatically generated

The overall fixed effects regression is seen to be statistically significant, as the p-value from the F-test of overall significance is 0.000, indicating a significant regression. The regression contained 2,156 observations in total, so the analysis did have a sizeable number of observations in the final regression which is valuable for the precision of the estimates. The independent variable of interest of the human freedom index value is seen to have a statistically significant positive effect on the dependent variable of GDP growth rate per capita, which is consistent with the hypothesis of the relationship between the two variables. The magnitude of the effect of the human freedom index variable was also quite large, as it indicated that for every point increase in the human freedom index, we expect a 1.31 percentage point increase in a country’s GDP growth rate per capita, all else held constant. This is a very large effect present, as the standard deviation for GDP growth per capita is around 5.14, indicating that it is around a fourth of a standard deviation for each point increase in the human freedom index value.

Most of the control variables were seen to be significant with the expected signs, as unemployment rate was seen to have the expected negative sign, foreign direct investment was seen to have a statistically positive effect on production, and population growth saw a negative effect on GDP per capita, indicating that shocks from population changes were significant. Surprisingly, the value for the Economic Freedom Index did not have a positive, statistically significant effect as seen in the literature. As mentioned, a concern was possible collinearity with the human freedom index causing the economic freedom index to be insignificant, but when the regression was rerun not including human freedom index and only with the economic freedom index as the independent variable of interest, it indicated that the value was still insignificant as seen in Table 3 below.

Table 3

A screenshot of a computer

Description automatically generated

This indicates that the value for the economic freedom index did not have a statistically significant effect on GDP per capita growth rate, even when accounting for possible collinearity with the human freedom index.

When looking at the trend of the human freedom index since 2000, it is clear that there has indeed been a decrease in worldwide levels of human freedom, which is consistent with the literature. This can be seen in Figure 1, which displays the average Human Freedom Index level by year from 2000 to 2021.

Figure 1

There is also seen to be a large decrease in worldwide human freedom levels in 2020 and into 2021, which was likely caused by a decrease in freedom of movement, freedom of assembly, and rule of law due to the lockdowns and restrictions many countries put in place. As the data only goes to 2021, we are unable to observe if this trend of a large decrease in comparison to previous years persists or if the levels of human freedom would revert to the original trend before the shock to the data.

In figure 2, we can see the trend of the economic freedom index, which is seen to be less of a consistent trend than that of the human freedom index.

Figure 2

This up-and-down nature of the economic freedom index could be due to the changing worldwide economy, where countries may be more likely to enact similar economic policies depending on the worldwide economic trends. The trend is seen to be not as strong in economic freedom, however, unlike the human freedom index, it tends to be trending upwards on a worldwide level, which the literature would indicate is good for economic growth. Another possibility for why this was statistically insignificant is a different construction of the economic freedom index variable than what was traditionally used in the literature that yielded a positive result.

**VI. CONCLUSION**

This study did confirm the hypothesis that higher levels of human freedom in a country cause the level of GDP growth rate to be higher. The estimate of the effect of the human freedom index was large as well, indicating that for a point increase in the human freedom index for a country, their expected GDP growth rate per capita would increase by 1.31 percentage points, which is a large magnitude for a variable such as GDP growth rate per capita. Surprisingly, the variable for the economic freedom index was statistically insignificant, which is different from the literature on the relationship between economic freedom and growth. A lot of the literature for economic freedom is older, however, so it may be worth looking to see if there was a possible structural break between economic freedom and its effect on GDP growth.

Regarding future research, this positive relationship is a useful baseline for other research as well as for policy makers that may be interested in justifying changes in legislation that would increase freedoms in a society. While the Human Freedom Index is vague, it is important to display that freedoms for people can have positive effects on the economy, as it displays the overall concept which could inspire more specific future research. It could be valuable to look at the different categories and subcategories that make up the Human Freedom Index values and look at their effects on economic indicators. This future research could be more valuable for specific policies, as the categories of the Human Freedom Index are generally more specific and applicable to real policies instead of just the general idea of human freedom.

It would also be interesting to look at other economic indicators such as the GINI coefficient to represent inequality, real personal income, or the Human Development Index mentioned in the literature review, as while GDP increase is pretty universally good for a country, it is also important to look at if the citizens of the country are directly benefiting from the increase in production as much as they should, especially if they are undergoing economic hardship.

References

Berggren, N., & Jordahl, H. (2005). Does free trade really reduce growth? Further testing using the economic freedom index. *Public Choice*, *122*(1-2), 99–114. https://doi.org/10.1007/s11127-005-3994-2

Biggeri, M., & Mauro, V. (2018). Towards a more “Sustainable” Human Development Index: Integrating the environment and freedom. *Ecological Indicators*, *91*, 220–231. https://doi.org/10.1016/j.ecolind.2018.03.045

Diarrassouba, M., & Naanwaab, C. (2016). Economic Freedom, Human Capital, and Foreign Direct Investment. *The Journal of Developing Areas*, *50*(1), 407–424. https://www.jstor.org/stable/pdf/24737356.pdf?refreqid=fastly-default%3Add502dc354593736bc0438eeb6caf09c&ab\_segments=&origin=&initiator=&acceptTC=1

Gwartney, J. D., Lawson, R. A., & Holcombe, R. G. (1999). Economic Freedom and the Environment for Economic Growth. *Journal of Institutional and Theoretical Economics*, *155*(4).

Hu, P. (2020). TRENDS IN HUMAN FREEDOM INDEX ACROSS GLOBAL REGIONS DURING 2008–2016. *The European Journal of Humanities and Social Sciences*, 197–203. https://doi.org/10.29013/ejhss-20-4-197-203

Hussain, M., & Haque, M. (2016). Impact of Economic Freedom on the Growth Rate: A Panel Data Analysis. *Economies*, *4*(4), 5. https://doi.org/10.3390/economies4020005

Mesut Alper, G. (2020). The Impact of Economic Freedom on Human Development in European Transition Economies. *ECONOMIC COMPUTATION and ECONOMIC CYBERNETICS STUDIES and RESEARCH*, *54*(3/2020), 161–178.

Naanwaab, C. (2018). Does Economic Freedom Promote Human Development? New Evidence from a Cross-National Study. *The Journal of Developing Areas*, *52*(3), 183–198. https://www.jstor.org/stable/pdf/26417039.pdf?refreqid=fastly-default%3A2dd6805c730b06815c4f67f679070259&ab\_segments=&origin=&initiator=&acceptTC=1

Nikolaev, B. (2014). Economic Freedom and Quality of Life: Evidence from the OECD’s Your Better Life Index. *The Journal of Private Enterprise*, *29*(3).

The World Bank. (2022). *World Development Indicators | DataBank*. Worldbank.org. https://databank.worldbank.org/source/world-development-indicators#

(2023). Cato.org; Cato Institute. https://www.cato.org/human-freedom-index/2023#:~:text=After%20having%20fallen%20significantly%20in